

into the trough A by the crumbing fingers *e* of the two outer shafts in the upper row and is then seized by the crumbing fingers *e* of the two lower shafts and forced to the bottom of the trough, and if the crumbs are fine enough they pass through the perforations in the bottom of trough A and fall in a suitable receptacle. If the pieces of bread are too coarse to pass through the perforated bottom they are carried around by the two lower shafts E and thrown up to the central shaft and one of the outer shafts to be carried to the top of the trough again and thence to the crumbing action of the fingers *e* a second time and so on until the requisite fineness is attained.

The operation of the machine is apparent. The material being thrown into the trough and the shafts started the bread is seized by the tearing fingers and drawn into the machine where it is acted upon by the crumbing action of the fingers until reduced to the required fineness.

It will be seen that owing to the disposition of the shafts in the trough the material has no chance to escape the action of the crumbing or tearing fingers but is kept passing through the machine continually until thoroughly crushed.

What I claim is—

1. In a bread crumbing machine, the combination with a trough having a curved perforated bottom and diverging sides, shafts running lengthwise said trough near the bottom thereof, said shafts being placed in two horizontal series, radially disposed intermeshing crumbing fingers on said shafts, driving pinions, carried by said shafts, which mesh with one another so that the outer shafts on one side of each horizontal series revolve in an opposite direction from the shafts on the other side, substantially as described.

2. In a bread crumbing machine, the combination with the trough A formed of a single piece of sheet metal and having a curved perforated bottom and diverging sides, of the stiffening side strips C riveted to the upper edges of said diverging sides, the supporting legs *a* secured to said trough, two sets of horizontally arranged shafts running lengthwise said trough near the bottom, intermeshing crumbing fingers on said shafts and meshing driving pinions at the outer ends of said shafts so disposed that when power is applied to drive said shafts the outer shafts on one side of each series will revolve in the same direction and oppositely from those on the other side.

3. In a crumbing machine, the combination with the trough A formed of sheet metal and having a perforated bottom, outwardly flaring sides, and vertical end pieces B, of the series of horizontal shafts E running lengthwise the trough A near the bottom thereof and journaled in the end pieces B, radially disposed intermeshing crumbing fingers *e* on said shafts E and driving pinions *e'* carried at the outer ends of shafts E which project through one of the end pieces B, said driving pinions meshing with one another and being so arranged with relation to one another that when power is applied to drive the shafts the outer shafts on one side of each series will revolve in the same direction and oppositely from the outer shafts on the other side, and a driving crank D secured to one of said shafts E.

In testimony whereof I affix my signature in presence of two witnesses.

JOSEPH LEE.

Witnesses:

SAMUEL P. THRASHER,
JOHN C. KENNEDY.